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One hundred twenty first-grade Mexican-American students (60 from each Fort Worth and Laredo, Texas) were subjects of an experiment which attempted to determine whether bilingualism inhibits verbal ability in one or both of the children's languages. The PPVT-A (Peabody Picture Vocabulary Test, Form A) was used to test verbal ability and bilingualism was assessed by a Spanish translation of the Hoffman Bilingual Schedule administered to the parents (a copy of which is reproduced in the appendix). Results, contrary to previous studies cited, showed that the degree of bilingualism was not negatively correlated with the PPVT-A in English or Spanish. The underlying complexities of testing bilingualism are discussed with particular reference to the importance of community influence on the child's bilingual ability. The article is divided into sections which discuss methods, results, and conclusions of research. Statistical tables and references are included. (CW)

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FINAL REPORT

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The Influence of Bilingualism on Tested Verbal Ability in Spanish and English

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Section 4

SUMMARY

The effect of bilingualism on the language performance of Mexican-American children is uncertain. The research of MacNamara (1965) suggests that bilingualism impairs verbal ability in both languages while the work of Gaarder (Appendix A, article I) in Puerto Rico indicates that bilingualism adversely affects only the adopted language. The present study compared the degree to which children are bilingual with their performance on tests in English and Spanish to observe the effects of bilingualism on both languages.

A total of 120 first-grade Mexican-American children were administered the Peabody Picture Vocabulary Test, Form A in English. Their parents received the Hoffman Bilingual Schedule to determine the degree of family bilingualism. On the basis of these results and school records the children were divided into three groups matched for age, sex, geographic location, degree of bilingualism, and PPVT-A performance. The three groups were re-tested on Form B of the PPVT in English, Spanish, and English-Spanish simultaneously.

It was proposed that, if bilingualism impairs word recognition in both languages, then there should be no differences in the means or variances among the three groups, and there should be similar negative correlations between the degree of bilingualism and verbal performance in each of the groups. The results of the study indicate that bilingualism does not impair performance in both languages. The addition of Spanish to the testing procedure substantially improved word recognition scores. The tests in Spanish and English-Spanish were more discriminating among individuals than the test in English, and there were no negative relationships between the degree of bilingualism and verbal ability in English or Spanish.

Of particular interest were differences between Laredo and Fort Worth children. Fort Worth families use less Spanish than families in Laredo, and the press for English in the Fort Worth community is greater than in Laredo. Apparently this lack of community and family support for Spanish has depressed Spanish word recognition without comparable gains in English. The children in an overwhelmingly English-speaking community were more handicapped in language performance than children in a community that supports Spanish.

Section 5

INTRODUCTION

Two recent conferences on the education of Mexican-American children in the Southwest indicate the interest Southwestern educators and community leaders have in the instructional problems presented by bilingual children. The Texas Conference for the Mexican-American (1967) emphasized that bilingual education is to receive priority in efforts to improve Texas education. An earlier conference at Tucson, Arizona (1966) had similarly stressed the importance of bilingual education (Appendix A, article 3), but also suggested a few of the difficulties preventing the development of adequate instruction for bilinguals. Among the barriers to effective bilingual education are our incomplete understanding of the effects of bilingualism on both Spanish and English and our inability to satisfactorily assess the language facility of bilingual children (Appendix I, article 2). The purpose of this research was to add to our understanding of the effects of bilingualism on one aspect of verbal ability, word recognition.

The effects of bilingualism on language development are uncertain. It is clear from even casual observation and from a number of studies that bilingualism depresses performance in the adopted language. It is much less clear, however, how bilingualism affects performance in the native language. It is possible that the conflicting language demands of the home, school, and community impair language performance in both languages and that bilingual children have a deficit in any kind of verbal behavior.

The uncertainty about the effects of bilingualism are reflected in two articles by Jansen (1962 a and b). He summarizes the research which indicates that bilingualism adversely affects language performance (1962 a) and, in a sequel, describes research which suggests that bilingualism is an advantage (1962 b). The issue appears again in articles concerning bilingual education. MacNamara (1965), studying bilingual instruction in Ireland, reports that bilingual instruction depresses performance in both languages. In contrast, Gaarder (Appendix A, article I) cites a Puerto Rican study which indicates that the school performance of bilingual Puerto Rican children in their native Spanish is superior to norms for monolingual American children. Fishman (1965) and Manuel (1966) similarly maintain the position that bilingual education will adequately develop the verbal ability of bilingual children. The present study addresses itself to this issue and examines word recognition in Spanish and English through a picture vocabulary test. It investigates the performance of first-grade Mexican-American children in English and Spanish and compares this performance with the degree to which the children are bilingual. This latter comment, the degree to which children are bilingual, requires some explanation.

Although a series of studies completed by Hoffman in 1934 demonstrated clearly that bilingualism is not a simple unitary quality, most research on bilingualism tends to treat it as an "either-or" characteristic. Hoffman pointed out that bilingualism is a complex characteristic varying in

degree. There are levels of bilingualism depending on the family structure and the pressure of the English-speaking community. The more recent research of Norman and Mead (1960) confirms Hoffman's observations. Spanish-speaking children varied in their performance on a picture vocabulary test administered in English in direct proportion to the intensity of their bilingualism. The research of Hoffman, Norman, and Mead has pointed out the complications in research on verbal skills among bilinguals, but the work of these investigators has also suggested an approach which may add to our understanding of the effects of bilingualism on word recognition in both English and Spanish. By examining the relationship between the degree to which children are bilingual and their performance on a test administered in both languages, it may be possible to infer the effect of bilingualism on verbal behavior generally, that is, on English and Spanish.

The results of this inquiry apply to the issue of the effects of bilingualism on language development. They may also contribute to the recent interest in bilingual education and to attempts at more adequate assessment of the ability of Mexican-American children.

Section 6

METHODS

Sample: The sample for this study consisted of 120 bilingual Mexican-American children who entered the first grade in September of 1967. Since the research of Norman and Mead (1960) suggests that the level of bilingualism is rather directly influenced by the type of community pupils live in, sixty of the pupils were selected from Fort Worth, Texas and sixty pupils were selected from schools in Laredo, Texas. Both boys and girls in approximately equal proportions were selected. No attempt was made to select children within certain ability ranges since measurement of verbal ability was the initial step in the project.

Instruments: Two bilingual graduate students in Guidance and Counseling at Texas Woman's University used the Hoffman Bilingual Schedule to determine the level of bilingualism in all of the selected children. The Schedule was administered to parents rather than children since first-grade children were unlikely to be able to report accurately on the questions asked. The Schedule contains 14 questions divided into 37 parts. Questions are asked concerning the use of Spanish in the home and contacts with English in the community or through mass media. The Schedule is a five-point rating scale ranging from "never" through "always". Hoffman reports validities of .73 and .83 in previous studies and a test-retest reliability of .81 when used with older children. The schedule yields a score for each child which indicates the degree to which the child is bilingual.

The Peabody Picture Vocabulary Test was used to measure word recognition. The instrument is individually administered and presents a graded series of pictures and vocabulary words which are to be associated. The PPVT has several advantages for this study. It requires neither reading nor an oral response. Answers may be indicated by pointing, or any other agreed upon non-verbal response. At least at the early levels, the pictures and words seem common to the experience of most young children. Finally, the PPVT has a wide range (1 year 9 mos to 18 years), is quickly administered, and, since it is easy to score and administer, is commonly in use as an instrument in elementary schools, in special education, and in reading diagnosis. The PPVT reports a concurrent validity with the Stanford-Binet of .71, the median of a number of studies. The manual for the test reports an alternate form reliability of .77, similarly a median from a number of studies. The Spanish form of the PPVT used in this study was developed at Texas Woman's University. Miss Maria Teresa Quijano, a graduate student in Counseling, translated the test and checked it with bilingual students at the University and elementary children in Laredo, Texas.

Design: During September and October of 1967 all 120 pupils in the study were given the PPVT - Form A in English. During the same period, parents of these children were given Hoffman's Bilingual Schedule. The children were then divided into three comparable groups on the basis of PPVT scores,

the results of the Hoffman Bilingual Schedule, Community, and sex. In March and April all 120 children were retested using Form B of the PPVT under the following conditions:

Group E (N=40) = PPVT readministered in English

Group S (N=40) = PPVT readministered in Spanish

Group ES (N=40)= PPVT readministered in English and Spanish

(For the E-S group the stimulus word was presented in English and then Spanish before any response was made.)

To prevent any complications arising from oral responses in one of the two languages, all children responded by pointing.

The results of this procedure provided for several comparisons pertinent to the problem under investigation:

1. If bilingualism affects word recognition both in English and Spanish, then there should be no difference in the means of the PPVT for groups E, S, and ES.

2. If bilingualism affects word recognition in both English and Spanish then there should be no differences in the ability of the PPVT to discriminate among individuals (that is, no differences in variance) within each of the three groups, E,S, and ES.

3. If bilingualism affects word recognition in both English and Spanish, then there should be similar negative relationships (negative correlations) between the degree of bilingualism on the Hoffman Schedules and scores on the PPVT for each of the three groups, E, S, and ES.

To examine these relationships, it was expected that the data would be subjected to analysis of variance, Bartlett's test for homogeniety of variance, Pearson product-moment correlations, and t tests as indicated. Differences among the groups were to be accepted at or beyond the .05 level of confidence.

Section V

RESULTS

A total of 120 pupils, 60 from Fort Worth and 60 from Laredo elementary schools were investigated in this study. After initially administering the Hoffman Bilingual Schedule and the Peabody Picture Vocabulary Test - Form A in English, the 120 children were divided into 3 groups comparable in sex, age, socioeconomic level, degree of bilingualism, and picture vocabulary IQ in English. Each of the three groups was composed of 20 pupils from Fort Worth and 20 pupils from Laredo. The three groups were retested with the Peabody Picture Vocabulary Test; one group in English (E), a second in Spanish (S), and a third in English and Spanish simultaneously (E-S). The data from this testing of bilingual Mexican-American children may be conveniently presented in three sections:

1. Control Data: results which indicate that the three groups in the study (E, S, E-S) were comparable.

2. Experimental Data: results which describe the relationship between the degree of bilingualism and verbal performance in English and Spanish.

3. Exploratory Data: results which seem important, but which were peripheral to the original research design.

Control Data:

The 120 children in the study were placed in three groups of forty each matched for sex, socioeconomic level, age, degree of bilingualism, performance on the PPVT-A in English, and geographic location. The groups were similar in sex, socioeconomic level, and community representation (Table I).

The mean ages for the three groups were 7 years 0 months for groups E and S and 7 years 3 months for group E-S. An analysis of variance yielded an F of 2.98 with 2 and 117 df indicating no differences in age among the three groups.

An analysis of variance of the results of the Hoffman Bilingual Schedule administered to parents yielded an F of 1.78 with 2 and 117 degrees of freedom indicating no differences in the degree of bilingualism among the three groups. Means for the groups - expressed as Bilingual Quotients - were E 27.9, and both S and E-S 27.3.

The PPVT - Form A was administered in English. Analysis of the PPVT-A scores indicated no differences among the three groups on this test of word recognition. Means for the groups - expressed in IQ's - were E 79.2, S 78.9, and E-S 78.2, yielding an F of .48 with 2 and 117 df. The mean in each of the groups was substantially below the PPVT norms for monolingual American children. The data indicating comparability among groups is summarized in Table II.

TABLE I

Summary of the Control Data Indicating
Comparability of Three Experimental Groups

N-120 (40 each group)	Group E	Group S	Group E-S	F
Sex:				
Male	22	20	20	
Female	18	20	20	
Economic Level:				
High	2	1	1	
Medium	18	16	19	
Low	20	23	20	
Location:				
Fort Worth	20	20	20	
Laredo	20	20	20	
Age: years and months	7-0	7-0	7-3	2.98 ns
Hoffman Bilingual Schedule: BQ	27.9	27.3	27.3	1.74 ns
PPVT-S IQ (English)	79.2	78.9	78.2	.48 ns

Observations during the administration of the Hoffman Bilingual Schedule to parents and the PPVT-A to children suggested that further analysis of the control data by community would be profitable. The families in Fort Worth seemed to use less Spanish in the home than Laredo families, and the Fort Worth children seemed to perform better on the PPVT-A in English than the Laredo children. To check these observations, the control data were examined for community differences. For all Laredo children in the initial control testing, the mean IQ on the PPVT-A in English was 76.1 The Fort Worth children on the same instrument obtained a mean IQ of 81.8. Comparison of the means yielded a CR of 2.39, significant at the .05 level of confidence. Both groups were lower than the PPVT norms for monolingual American children.

The results of the Hoffman Bilingual Schedule were examined for community differences. The mean Bilingual Quotient for Mexican-American families in Fort Worth was 21.9 and for Laredo families 33.4. The difference was significant at the .01 level of confidence (CR= 8.2). A high score on the Hoffman indicates a high degree of bilingualism. The difference in means between families in Fort Worth and Laredo indicates that

Laredo families use substantially more Spanish in the home than do Mexican-American families in Fort Worth.

Analysis of the control data demonstrates that the three experimental groups were satisfactorily matched. Additional analysis indicated, however, that Laredo children in all three groups were more bilingual and less successful on the English administration of the PPVT-A than Fort Worth children.

Experimental Results:

The design for this research suggested that if bilingualism impairs word recognition in both English and Spanish, then three events should occur:

Proposition 1 - There should be no difference in the means on the PPVT-B for the three groups E, S, and E-S retested respectively in English, Spanish, and English-Spanish.

Proposition 2 - There should be no differences in the ability of the PPVT-B to discriminate among individuals (that is, no differences in variance) within each of the three groups E, S, and E-S.

Proposition 3 - There should be similar negative correlations between the degree of bilingualism on the Hoffman Schedule and scores on the PPVT-B for each of the three groups E, S, and E-S.

To examine these propositions the data were to be analyzed by an analysis of variance (Proposition 1), Bartlett's test for homogeniety of variance (Proposition 2), and Pearson Product Moment Correlations (Proposition 3). Inspection of the data, however, suggested some modification in these procedures. The liklihood of differences in variance seemed obvious because of the large differences between two of the standard deviations (E 13.3 and E-S 22.0). Under the circumstances it seemed sufficient to use a less sensitive test for homogeniety of variance (Winer, 1962). An Fmax test indicated differences among the variances in the groups. This information refuted proposition 2, but made an analysis of variance for proposition 1 inappropriate. Analysis of variance assumes homogeniety of variance, and, although F is robust with regard to this assumption, it seemed safer to use another approach. The statistical procedures, then, included; Welch's technique for testing the differences between means assuming unequal variances (Winer, 1962) for proposition 1, the Fmax test for homogeniety of variance for proposition 2, and the Pearson r for proposition 3.

Comparisons were made among the means on the PPVT-B administered in

English, Spanish, and both languages simultaneously. The mean IQ's for the three groups were: E 79.6, S 81.9, and E-S 89.1. Welch's procedure indicated that there was only one difference among the means of the three groups. The group taking the PPVT-B in English-Spanish scored higher than the group completing the test in English (t_{obs} =2.37, f = 68.5, .05 level). There were no differences in performance between E and S or between S and E-S on the PPVT-B. The difference present in this analysis leads to rejection of proposition 1.

An Fmax test for homogeniety of variance indicated a difference among the variances of the three groups at the .05 level of confidence (Fmax =2.73, 3 treatments and 39 df). Further examination of the results demonstrated differences between the standard deviations of groups E and S (CR = 2.44) at the .05 level of confidence and between E and E-S (CR =3.12) at the .01 level of confidence. There was no difference between S and E-S. Testing in Spanish or English-Spanish produces a wider spread of scores among bilingual children than testing in English only.

The Fmax suggested the existence of differences in the variances of the three groups, and tests for differences between the standard deviations indicated that the PPVT-B administered to the S and E-S groups were more variable than the test administered in English. This analysis leads to rejection of proposition 2. The variances of the groups were not homogeneous.

Pearson product moment correlations were computed for each group, comparing performance on the PPVT-B with scores on the Hoffman Bilingual Schedule. There was no relationship between the Hoffman and the Peabody in groups E and S. There was a moderate, positive relationship, significant at the .01 level of confidence, between the degree of bilingualism and performance on the PPVT-B administered in English-Spanish (r = .46, 38df). The higher the degree of bilingualism the better the pupils tended to do on the Peabody administered in both English and Spanish. Proposition 3 must be rejected since there were no negative correlations between the Hoffman and the Peabody.

Analysis of the means on the PPVT-B for the three groups, the variances within each of the three groups, and the relationships between the Hoffman Schedule and the Peabody result in rejection of all three propositions advanced in the study. Bilingualism does not appear to impair language performance in both English and Spanish. A summary of the experimental data is provided in table 2.

TABLE 2

Summary of the Experimental Data on
Propositions 1, 2, and 3

	Comparison	Groups	Results	Signif.	Proposition
Proposition 1	Means	E vs S	t_{obs} = .61, f=65	ns	
	Means	E vs E-S	t_{obs} =2.37, f=69	.05	rejected
	Means	S vs E-S	t_{obs} =1.53, f=78	ns	
Proposition 2	Variance	E,S, E-S	Fmax=2.73	.05	
	Std. Dev.	E vs S	CR =2.44	.05	rejected
	Std. Dev.	E vs E-S	CR =3.12	.01	
	Std. Dev.	S vs. E-S	CR = .63	ns	
Proposition 3	Hoffman and	E	r= .21	ns	
	PPVT-B	S	r= .29	ns	rejected
	Scores	E-S	r= .46	.01	

Exploratory Data:

In the process of administering the Hoffman Bilingual Schedule to parents and the PPVT-B to children the examiners observed differences in the bilingualism of Fort Worth and Laredo families and in the picture vocabulary performance of the children in the two communities. Some of these differences have been reported under Control Data, but further exploration seemed appropriate.

The three experimental groups were divided by community providing E, S, and E-S groups for Laredo and E, S, and E-S groups for Fort Worth. Comparisons were made between communities for each of the three groups and then within groups for each community separately.

Comparisons on the PPVT-B administered in English, Spanish, and English-Spanish between communities revealed no differences between the communities in either English or English-Spanish. There was, however, a marked difference between Fort Worth and Laredo children on the PPVT-B in Spanish. Laredo children obtained a mean IQ of 94.8 and the Fort Worth children a mean IQ of 72.8. The difference yielded a CR of 11.7 significant beyond the .01 level of confidence. These findings suggest that the Laredo children were equal to the Fort Worth children in English and English-Spanish and superior to them in Spanish. It is also noteworthy that the Laredo group, when retested in Spanish, improved their IQ scores an average of 15.7 points and that this improvement placed them in the average range for monolingual American students.

To further investigate differences in performance related to communities, comparisons were made between the initial testing with the PPVT-A in English and the retesting in English, Spanish, and English-Spanish. The analysis applied a procedure suggested by Garrett (1966) for correlated data.

IQ scores for the Fort Worth children remained the same when retested in English-Spanish. Their IQ scores on the retests in English and in Spanish, however, declined. The mean loss in English was 5 ($t=1.99$, df 19, .05 level) and in Spanish 6 ($t=2.27$, df 19, .01 level).

The results for the Laredo children were considerably different. The Laredo children obtained higher IQ's on the retesting in Spanish ($t=2.22$, 19 df, .05 level) and in English-Spanish ($t=3.65$, 19 df, .01 level). Their means on the two tests in English were not different.

The comparisons between and within the Fort Worth and Laredo children suggest that the IQ's of Laredo, Mexican-American children are substantially higher in Spanish than in English, but that Fort Worth, Mexican-American children maintain a constant level or decline when tested in Spanish. The exploratory data developed in the study are summarized in table 3.

TABLE 3

Summary of the Exploratory Data on
Mexican-American Children in Fort Worth and Laredo

A. Comparisons between Fort Worth and Laredo Children:
PPVT - Form B - Mean IQ's

Group	Fort Worth Mean	Laredo Mean	t (19df)	Significance
E	78.5	80.4	1.40	ns
S	72.8	94.8	11.70	.01
E-S	85.8	87.3	.85	ns

B. Comparisons within Each Community - Fort Worth and Laredo
Mean differences between PPVT - A in English and PPVT-B IQ

Group	Mean loss or gain	t (19df)	Significance
FW - E	5 loss	1.99	.05
FW -S	6 loss	2.27	.05
FW - E-S	4 loss	1.39	ns
L - E	4 gain	1.33	ns
L - S	12 gain	2.22	.05
L - E-S	19 gain	3.65	.01

The results and analysis of the data from the Hoffman Bilingual Schedule and the Peabody Picture Vocabulary Test lead to rejection of the three main propositions in the study and strongly suggest that community factors play an important role in the language performance of bilingual children.

Section 8

CONCLUSIONS AND RECOMMENDATIONS

Inferences from the results of this study add most directly to the conflicting literature on the effects of bilingualism. Mexican-American children obviously are handicapped in their use of their adopted language, English, at the beginning of school. It is not so obvious, however, whether the use of Spanish at home in an English-speaking society impairs their overall language performance, that is, their verbal ability in both languages. The literature on bilingualism supports both the possibility that bilingualism damages performance only in the adopted language (Fishman, 1965) and the possibility that bilingualism depresses performance in both languages (McNamara, 1966). This study suggests that bilingualism does not impair word recognition in both languages.

Evidence for this conclusion is provided by the rejection of all three propositions in this research design. If bilingualism damaged both languages, then it was expected that there would be no differences in the means or variances among tests administered in English, Spanish, and English-Spanish and there would be a negative relationship between the degree of bilingualism and verbal ability. None of these occurred. The bilingual children did substantially better on the word recognition test in English-Spanish than they did on the test in English only. The spread of scores in the Spanish and English-Spanish versions of the Peabody was greater than in the English version, and the degree of bilingualism was not negatively correlated with scores on the Peabody in either language or the languages combined. More specific evidence is provided by particular findings in the study. The Laredo children improved their IQ scores 15.7 points when retested in Spanish. Their mean IQ in Spanish was 94.5, within the average range for monolinguals - particularly when one considers that the children were predominantly from a lower socioeconomic background. The positive relationship between the degree of bilingualism and scores on the English-Spanish version of the Peabody provides further specific evidence that bilingualism does not impair verbal performance generally. The pupils who were more bilingual tended to perform better on this test of verbal ability than less bilingual pupils.

The major conclusion related directly to the research design and to the literature on the effects of bilingualism is that, at least at the point of school entry, bilingualism has not impaired word recognition in both languages, English and Spanish. This conclusion, however, seems less interesting than some inferences from the data which were not anticipated. These additional inferences have implications for further research and for programs in bilingual education.

The Hoffman Bilingual Schedule indicated that Fort Worth families encourage less Spanish at home than families in Laredo. There are at least two reasons for this. The language of commerce and social interaction in Fort Worth is overwhelmingly English, and a minority group of Mexican-Americans must use English to function effectively. At a more personal level, the examiners noted feelings of guilt on the part of Mexican-American families in Fort Worth when they discussed the extent to which Spanish was used in the home. Laredo children live in a much different environment. Both English and Spanish are useful in commerce and social interaction in a city which is 80% Mexican-American and borders on a Mexican city. It is possible to function in Laredo with limited English, and families seemed less concerned about their use of Spanish at home. The apparent effects of these different environments were interesting. The children in Laredo seemed to be approximately equal to Fort Worth Mexican-American children in English and to be superior to them in Spanish. The Fort Worth children, in contrast, seemed to have impaired verbal ability in Spanish without a compensating gain in English. Bilingualism in Fort Worth seems to be much more damaging to verbal performance than bilingualism in Laredo. It appears that bilingual children in a dominantly English-speaking community have a greater language handicap than children in a community which supports the native language.

The language disadvantage evident in the Fort Worth children seems pertinent to a theoretical and a practical question in bilingual education. The questions concern which language to emphasize for bilingual education and which stratagem to apply, Bilingual Instruction or English as a Second Language. A limited study, however, can only suggest possibilities.

Jansen (1962) has raised the question of whether it is better to attempt to educate bilinguals for equal competence in both languages or dominance in one, and Manuel (1966) has asserted that dominance in one, the native language, is better. The present study, perhaps, provides a tentative answer related to their articles. The differences between Laredo and Fort Worth children suggest that it is better to develop dominance in one language and that Manuel is probably correct. The language should be Spanish if Mexican-American children are to develop any adequate verbal performance.

There remains one further result of the study which should be mentioned. It is perhaps better termed a "warning" than a conclusion. Teacher, counselors, and psychologists have all been concerned about fairly evaluating the ability and achievement of Mexican-American children. Especially there has been an interest in developing instruments in Spanish to overcome the obvious limitations on testing bilingual children in an adopted language. Hoffman (1934) has indicated that bilingualism is not an all or nothing characteristic, that it varies in degree.

Fishman (1965) has added further complexities. Not only do bilingual children differ in the degree to which they are bilingual, but there are variations in the degree of bilingualism in the language skills possessed by each individual child. Encoding processes in a particular child, for example, may be more or less affected by bilingualism than decoding processes. The research presented here adds a further problem. The type of community which surrounds a child may be as influential as any individual or family characteristic. Testing a bilingual child is complex, and simply administering tests in Spanish to even first-grade Mexican-American children may be very misleading.

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Las Voces Nuevas del Suboeste

NEA 1966

"THE SUPERIORITY OF TEACHING BILINGUAL CHILDREN IN THEIR NATIVE TONGUE was demonstrated in Dr. Gaarder's presentation of research evidence to the Symposium.*

"In Puerto Rico, in 1925," Dr. Gaarder reported, "the International Institute of Teachers College, Columbia University, made an extensive survey of education to determine the relative effectiveness of learning through English and learning through Spanish. It should be recalled that our government had made English the principal medium of instruction in the Puerto Rican schools. To test reading, arithmetic, information, language, and spelling, they used the Stanford Achievement Test in its regular English version and in a Spanish version modified to fit Puerto Rican conditions. Over 60,000 tests were given, and I can sum up the results in two sentences:

"(1) In comparison with children in the continental United States, the Puerto Rican's achievement through English showed them to be markedly retarded.

"(2) The Puerto Rican children's achievement through Spanish was not only considerably greater than their achievement in English, but also, by and large, markedly superior to that of continental United States children, who were using their own mother tongue, English.

"These Columbia researchers came to the following conclusion, one with extraordinary implications for us here:

" 'Spanish is much more easily learned as a native language than is English. The facility with which Spanish is learned makes possible the early introduction of content into the primary curriculum. Therefore . . . every effort should be made to maintain it and to take the fullest advantage of it as a medium of school instruction.'

"What they are saying is that because Spanish has a writing system which closely matches the sound system, speakers of Spanish can master reading and writing very quickly and can begin to acquire information from the printed page at an earlier age. There are no reading problems in Spanish-speaking countries."

*Copies of Dr. Gaarder's address, which includes additional research evidence can be obtained from the NEA Publications-Sales Office.

"BILINGUALISM IS IN THE OLD AMERICAN TRADITION OF TEACHING THE CHILD WHERE HE IS," declared Dr. Jerome Applegate, president of the NEA.

"Our nation cannot afford to waste any resource which is available to the advancement of our country and the contribution it can make to the rest of the world. Therefore, we can no longer afford to let it happen that a group of our citizens cannot be in a position to make their full contribution.

"*What could bilingualism mean?*" Dr. Applegate asked rhetorically. "What could it mean to the development of a positive self-image among the children? What could it mean to us as educators in trying to find the way to do a better job of teaching boys and girls the skills they need for self-fulfillment? What could it mean to our force in service? What could it mean for our participation in trade and industry? The answer is in your hands."

VALID INSTRUMENTS FOR TESTING SPANISH-SURNAMED CHILDREN should be developed so that administrators, counselors, and testing personnel can make accurate assessments of the potential of these children.

Forma Final del Examen
Software Matemático Scala

ANEXO 2

Nombre		Fundamentos de Matemáticas
Matrícula		
Grupo		Carrera
Fecha de Nacimiento		Edad
Lugar de Nacimiento		
Lugar de Residencia	Padres	Madres
Años en los Estados Unidos	Padres	Madres
Oficio	Padres	Madres
Nacionalidad	Padres	Madres

Resumen

Nombre	Edad	Escuela	Grado

Resumen

Nombre	Edad	Escuela	Grado

_____	_____	_____	_____
_____	_____	_____	_____

Hermanas

Nombre	Edad	Escuela	Grado
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Entiende su padre el inglés? _____ Su madre?_____

¿Otros idiomas que su padre entienda? _____

¿Otros idiomas que su madre entienda? _____

¿Todos los idiomas que usted entiende (además del inglés)?_____

Fecha_____ Examinador:_____

1. ¿Lo hablan los siguientes a usted en otro idioma que el ingles?

   a) Padre
   b) madre
   c) abuelo
   d) abuela
   e) hermanos y hermanas
   f) parientes

2. ¿Le habla usted a los siguientes en otro idioma que el inglés?

a) padre
b) madre
c) abuelo
c) abuela
e) parientes
f) hermanos y hermanas

3. ¿Le habla su padre a los siguientes en otra idioma que el inglés?

a) madre
b) hermanos y hermanas

4. ¿Le habla su madre a los siguientes en otro idioma que el inglés?

a) padre
b) hermanos y hermanas

5. ¿Le hablan sus hermanos y hermanas a los siguientes en otra idioma que el inglés?

a) padre
b) madre

6. ¿Leen los siguientes algún periódico en otra idioma que el inglés?

a) padre
b) madre
c) usted

En las siguientes líneas escriba los nombres de periódicos en otro idioma que el inglés que cualquiera de los anteriormente mencionados haya leído.

_____ _____

_____ _____

7. ¿Leen los siguientes algunos libros en otro idioma que el inglés?

a) padre
b) madre
c) usted

8. ¿Escriben los siguientes cartas en otro idioma que el inglés?

En las siguientes líneas escriba los nombres de periódicos en otro idioma que el inglés que cualquiera de los anteriormente mencionados haya leído.

_____ _____

_____ _____

7. ¿Leen los siguientes algunos libros en otro idioma que el inglés?

a) padre
b) madre
c) usted

8. ¿Escriben los siguientes cartas en otro idioma que el inglés?

a) padre
b) madre
c) usted

9. ¿Se reciben en su casa cartas en otro idioma que el inglés?

10. ¿Asisten los siguientes a conferencias en otro idioma que el inglés?

a) padre
b) madre
c) usted

11. ¿Asisten a los siguientes teatros donde se presentan obras en otro idioma que el inglés?

a) padre
b) madre
c) usted

12. ¿Se escucha en su casa programas de radio en otro idioma que el inglés?

13. ¿Piensa usted en otro idioma que el inglés?

14. ¿Hay en su casa algunos libros en otro idioma que el inglés?

1. a)_____

b)_____

c)_____

d)_____

e)_____

f)_____

2. a)_____

b)_____

c)_____

d)_____

e)_____

f)_____

3. a)_____

b)_____

4. a)_____

b)_____

5. a)_____

b)_____

6. a)_____

b)_____

c)_____

11. a)_____

b)_____

c)_____

12. Si No

13. Si No

14. Si No

b)_____

4. a)_____

b)_____

5. a)_____

b)_____

6. a)_____

b)_____

c)_____

7. a)_____

b)_____

c)_____

8. a)_____

b)

c)

9. Si No

10. a)

b)

c)

N - Nunca AV - A' Veces CF - Con Frecuencia LMP - La mayor parte S - S

February 16, 1968

Dear Mrs.

We have chosen your child to be a part of a study being made by students from Texas Woman's University at Denton, Texas.

These ladies, Miss Minerva Rodriguez and Miss Teresa Quijano, will give your child a short test here at school. Then, they will want to ask you questions about the use of Spanish in your home. They will call on the phone or come by your home.

This study may help us get a program here at H.V. Helbing that will give special help both in Spanish and English to our Spanish speaking students.

Thank you for your cooperation.

Sincerely yours,

Mrs. Elizabeth Overstreet
Principal

EO:bs